

WHAT IS CLAIMED IS:

1. A reader for monitoring the movement of cargo, the reader comprising:
means for transmitting and receiving information;

an internal signal receiver for receiving indicators, from a device, related to at least one
5 of a position and a change in position of a particular piece of cargo to which the device is
affixed; and

means for logging position-based data of the particular piece of cargo.

2. The reader of claim 1, wherein the internal signal receiver comprises an internal
10 signal strength receiver for registering at least one received signal that indicates at least one of
the position and the change in position of a particular piece of cargo.

3. The reader of claim 1, wherein the internal signal receiver comprises an internal
time of arrival receiver for registering a time of arrival that indicates the position of a particular
15 piece of cargo.

4. The reader of claim 1, further comprising means for transmitting measured
Received Signal Strength Indicator (RSSI) or a Time Difference Of Arrival (TDOA) value of a
particular piece of cargo to a server for calculation of the position or change in position.

20 5. The reader of claim 1, wherein the reader receives indicators from a plurality of
devices affixed to a plurality of respective pieces of cargo.

6. The reader of claim 1, wherein the indicator represents an absolute position of the cargo.

5 7. The reader of claim 1, wherein the indicator represents a directional vector of the cargo.

8. The reader of claim 1, wherein the reader receives indicators at predetermined time intervals.

10 9. The reader of claim 1, wherein the reader is included in a system comprising a plurality of readers.

15 10. The reader of claim 1, wherein the reader is attached to a portion of an ocean-going vessel.

11. The reader of claim 1, wherein the reader is attached to a portion of a train.

12. The reader of claim 1, wherein the reader is oriented in a shipping yard.

20 13. The reader of claim 1, wherein the reader is oriented in a warehouse.

14. The reader of claim 1, wherein the reader is a second device and is included in an ad hoc network.

15. A server for monitoring movement of cargo, the server comprising:
5 means for storing a data map representing a position of each piece of cargo;
means for receiving indicators from at least one reader, said indicators representing a current position or directional vector for a particular piece of cargo; and
means for determining, based on the data map and the received indicators, whether a particular piece of cargo has moved beyond a predetermined threshold.

10 16. The server of claim 15, wherein if the particular piece of cargo has moved beyond the predetermined threshold, then an alarm is generated.

17. The server of claim 16, wherein the alarm is an audio alarm.

15 18. The server of claim 15, wherein the means for storing further comprises means for storing identification information for a particular piece of cargo.

19. The server of claim 18, wherein the identification information comprises at least
20 one of a license plate number, weight, and type of cargo.

20. The server of claim 15, wherein the server receives indicators at predetermined

time intervals.

21. A method of monitoring movement of cargo on a shipping vessel, the method comprising:

5 determining a data map, based on at least one of a Received Signal Strength Indicator (RSSI), a Time Difference Of Arrival (TDOA) value, and an Angle Of Arrival (AOA) value, including a position or change in position for each piece of cargo prior to moving the shipping vessel;

10 monitoring a position of each piece of cargo during movement of the shipping vessel; and providing an alarm if a piece of cargo moves beyond a predetermined threshold.

22. The method of claim 21, wherein the method further comprises equipping each piece of cargo with a permanently-installed device.

15 23. The method of claim 22, wherein the method further comprises equipping each piece of cargo with a reusable, non-permanently-installed device.

24. The method of claim 22, wherein the step of monitoring further comprises:
receiving indicators from at least one device, the indicators for indicating a position or a
20 directional vector of a particular piece of cargo; and
determining, based on the data map and the received indicators, whether a particular piece of cargo has moved.

25. The method of claim 21, wherein the step of determining a data map comprises calculating a position for each piece of cargo a plurality of times.

5 26. The method of claim 21, wherein the step of determining a data map comprises calculating the position or change in position by using at least one of raypath/range attenuation calculations, Nearest Neighbor Signal Strength (NNSS), and History Based Algorithms (HBA).